REMARKS

In the Office Action, dated July 15, 2008, the Examiner states that Claims 1-22 are pending and rejected. By the present Amendment, Applicant amends the claims.

REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 8 and 17 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite due to insufficient antecedent basis for the limitation "the Cl_2/CO ratio" in line 1. Applicant has amended Claims 8 and 17 to recite "a ratio of Cl_2/CO" as opposed to "the Cl_2/CO ratio." As such, Applicant respectfully asserts that the antecedent basis issues have been resolved and respectfully requests withdrawal of the rejection of Claims 8 and 17 under 35 U.S.C. § 112, second paragraph.

REJECTIONS UNDER 35 U.S.C. § 102 AND 35 U.S.C. § 103

Claims 1-22 are rejected under 35 U.S.C. § 102 as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Pollard (US 4,047,934) for the reasons of record. Applicant respectfully disagrees with and traverses these rejections.

While Pollard teaches a method that extracts iron from ore by selectively ***reducing*** iron (i.e. adding electrons), the method of the present invention removes iron by ***oxidizing it*** (i.e. removing electrons). Pollard's method involves opposite chemical reactions to the method of the present invention.

More particularly, in the method of the present invention, iron is transformed from a solid state as Fe^{+2} in chromite ($FeOCr_2O_3$) to a gaseous state as Fe^{+3} in the chloride $FeCl_3$. In Pollard, the solid Fe^{+2} in the ore such as ilmenite is reduced to metallic and solid Fe.

Applicant submits that Pollard fails to teach or suggest a method for increasing the chrome to iron ratio of a chromite product selected from the group consisting of ore and ore concentrate comprising the steps of mixing the chromite product with at least one salt so as to produce a mixture, whereby the concentration of salt in the mixture is selected to induce the selective chlorination of iron; and chlorinating the mixture in the presence of CO at a temperature sufficient to induce the formation of a thin film of a melt around the chromite product and at a

temperature able to promote the selective chlorination of iron, and forming gaseous $FeCl_3$, whereby an iron impoverished chromite product is yielded having an increased chromite to iron ratio as compared to that of the chromite product as recited in instant Claim 1 or similarly in instant Claims 13 and 22.

All conditions used in Pollard's method seek to promote the reduction of iron to a metallic state. (see for instance, Col. 1, lines 15-16, 18-20, 23; col. 2, lines 22-24, 60-62 and Col. 5, in claim 1, line 5 of Pollard)

More particularly, Pollard uses a bath of molten salt to promote reduction of iron in the ore and its segregation into larger particles of metallic iron (see for instance, Col. 1, lines 18-23).

For that purpose, Pollard describes the uses of a large amount of salt - *e.g.*, about 45% w/w of NaCl to extract iron from ilmenite in Example 1, namely 10 g of NaCl in 10 g of ilmenite and 2 g of metallurgical coke. (See Pollard, Example 1, Col. 3, lines 15 and 20; see also Col. 1 lines 24 to 29 and Example 3, Col. 3 at lines 48 and 52; and Example 3, Col. 4, lines 22 and 23).

In contrast, the present invention uses a quantity of salt sufficient to induce the formation of a thin film of a melt around the chromite product. This melt advantageously acts as a catalytic system: a chlorination solvent increasing chlorine diffusion in the chromite and consequent chlorination and oxidation of iron into gaseous $FeCl_3$ (see page 11, lines 5-13 of the instant application). In Examples presented in the instant application, the quantity of salt used varies between 0.8 to 15 % w/w (see Tables 2-4 at pages 17 -18 of the instant application).

Also, Pollard uses a carbonaceous material such as coke as a reductant to promote transformation of oxidized iron in ores into reduced metallic iron (see for instance Col. 2, lines 23-25, and col. 3, line 17-18 for Example 1 using Coke as reductant).

Furthermore, Pollard suggests using HCl or a hydrogen chloride generator which can be ferrous chloride and chlorinated hydrocarbons such as vinyl chloride wastes and scrap polyvinyl chloride to promote the reduction reaction (see Col. 2, lines 1-18). Pollard's method does not involve a chlorination of the ore (i.e. formation of chlorides) since adding HCl, ferrous chloride, vinyl chloride wastes or scrap polyvinyl chloride in Pollard's method does not produce chlorides.

More specifically, Pollard does not promote a selective chlorination of iron or

the formation of gaseous $FeCl_3$ as recited in the instant claims. As indicated above, Pollard's process removes iron from the ore (*e.g.*, ilmenite) by achieving metallisation of iron (see Pollard Col. 2, lines 23-25) so that after reacting the ore in the molten salt bath, heating at 750°C to 1300 °C and adding the hydrogen chloride generator, "[t]he reduced ore recovered from the bath may be separated into ***metallic iron*** and other unreduced components of the ore [...]". (col. 2, lines 60 to 66). The metallic iron can then be separated by magnetic separation (See Example 1, Col. 3, lines 29-31; Example 3, Col. 4, lines 29-30; and Example 4, Col. 4, lines 45-46).

The instant method extracts the iron by selectively chlorinating it and causing it to volatilize into gaseous $FeCl_3$ (ferric chloride) (see instant claims and page 12, last paragraph of the instant application for example).

Finally, the instant application specifies that $FeCl_2$ (ferrous chloride) formed during the process of the invention is rapidly chlorinated into $FeCl_3$ to avoid the production of a diffusion barrier by the solid $FeCl_2$ formed at temperature below this compound's melting point of 670°C. Indeed, this barrier may decrease the chlorine access to the reaction sites (see page 12, lines 9-17 of the instant application). Pollard further teaches away from the instant process by suggesting adding $FeCl_2$ prior to heating as hydrogen chloride generator (see Col. 2, lines 11 and 14; Example 3, col. 3, lines 46-47; and Example 4, lines 38-39).

To support a *prima facie* case of obviousness, the Office Action must establish "a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference." Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57,526 (Oct. 10, 2007).

In view of the foregoing remarks, Applicant submits that Pollard fails to teach or suggest each and every feature of the invention as recited at independent Claims 1, 13, and 22. Thus, it cannot be obvious to a person of ordinary skill in the art to modify the teachings of Pollard (reduction of iron into solid metallic iron) to arrive at the present invention claimed (oxidization of iron into gaseous iron chloride). Applicant respectfully asserts that it is not obvious to transform a method using a

specific reaction, namely a reaction of reducing ore into a method using the opposite chemical reaction of oxidizing iron.

Moreover, for Pollard to anticipate the present set of claims, it must teach or suggest each and every feature recited therein. As mentioned above, Pollard does not teach or suggest each and every feature of independent Claims 1, 13, and 22. As such, Applicant respectfully asserts that Pollard does not anticipate the present invention.

Since independent Claims 1, 13 and 22 are allowable over the cited prior art, Applicant asserts that all claims depending therefrom are allowable for at least the same reasons, as well as for the features that they recite. As such, Applicant respectfully requests withdrawal of the present rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a).

In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

January 6, 2009
Date

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